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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
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08/814.082 03/10/97 TAKAHASHI

M 684.2465

MMC1/0803
FITZPARTICK CELLA HARPER & SCINTO
30 ROCKEFELLER PLAZA
NEW YORK NY 10112-3801

EXAMINER

NGO.H

ART UNIT	PAPER NUMBER
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2871

DATE MAILED:

08/03/01

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No.

08/814,082

Applicant(s)

TAKAHASHI ET AL.

Examiner

Julie-Huyen L. Ngo

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-4,6,7,13-15,17 and 18 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☐ Claim(s) 1-4,6,7,13-15,17 and 18 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) ____
- 4) ☐ Interview Summary (PTO-413) Paper No(s) ____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on May 14, 2001 has been entered.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-3, 7, 13 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's admitted prior art (APA) in view of Kishigami (US 5,467,210).

As to claims 1, 2 and 13, Applicant's admitted prior art discloses, in figure 13, a display apparatus having a ^{circuits} connection structure comprising:

- _ a first substrate (1bp) having electrode terminals (12p) formed thereon;
- _ a semiconductor device (5p) having first/output electrodes (15p) and second/input electrodes (15p); with the first electrodes connected to the electrode terminals (12p);

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_ a flexible wiring member (4ap) having thereon a pattern of conductors each extending from a first end and second end on the flexible wiring member with the first ends of the conductors connected to the second electrodes^(15p) of the semiconductor device (5p); and

_ a circuit board (3p) disposed with a space from the first substrate (1bp) and connected to the second ends of the semiconductors (5p) on the flexible wiring member (4ap),

wherein said semiconductor device bridges the space between the first substrate and the circuit board.

However, the semiconductor device (5p) in the APA device does not have the first/output electrodes (15p) directly connected to the electrode terminals (12p) of the first substrate (1bp);

Kishigami teaches (abstract, col. 5, lines 57-67 and figure 4) connecting electrode terminals (14a, 17a, 20a) of the substrate (13) directly to the corresponding bumps (41) of electrodes (26, 27 and 28) of the semiconductor device (21) for reducing the manufacturing cost.

Therefore, it would have been obvious to one of ordinary skill in the art to connect the first/output electrodes directly to the electrode terminals (12p) of the first substrate (1bp), as taught by Kishigami, in the APA device for reducing manufacturing cost.

Although the circuit board (3p) in the applicant's admitted prior art device does not show the electrode terminals connected to the second ends of the conductors, it is well known in the art for a circuit board to have electrode terminals formed thereon for making electrical contacts between the circuit board and the flexible wiring member or any other connecting boards.

As to claims 3 and 14, it is well known and conventional in the art to have the electrode terminals of different panels/boards, e.g., a flexible tape carrier package (FTC) and driver IC or Printed Circuit Board (PCB), connect to each other by tape-automated bonding method (admitted by Applicant on page 1, line 25). Therefore, it would have been obvious for the electrode terminals of the semiconductor device (5p)

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connected to the first conductor ends of conductors (17) on a flexible wiring member (4ap) by tape-automated bonding method.

As to claims 7 and 18, the connecting part between the second electrodes of the semiconductor device (5p) and the first conductor ends of the conductors on the flexible wiring member (4ap) is sealed with a resin (16p).

Claims 4, 6, 15 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over APA device in view of Kishigami, as applied above to claims , and further in view of Hirai (US 5,311,341).

It is conventional and well-known in the art to have electrode terminals of two different panels/boards connecting with each other solely by an anisotropic conductive adhesive for easy replacement or detachment of defected panels/boards, as evidenced by Kishigami (col. 5, lines 51-54) and (figure 1b and col. 4, lines 63-69).

Hirai teaches that it is easy to replace or disconnect a defected TAB 4 from the liquid crystal panel by having the electrode terminals of the TAB 4 connected to electrode terminals 2 of the liquid crystal display panel by means of the anisotropic conductive adhesive (9).

Therefore, as to claims 4 and 15, it would have been obvious for one of ordinary skill in the art to have the first electrodes of the semiconductor device (5p) connecting to the electrode terminals (12p) on the substrate (1bp) of the display panel solely by an anisotropic conductive adhesive, as taught by Hirai or Kishigami, in the modified device of Applicant's admitted prior art in view of Kishigami for easy replacement of defective panels/boards.

As to claims 6 and 17, it would have been obvious for one of ordinary skill in the art to have the second ends of the conductors (17) on the flexible wiring member (4ap) connecting to the electrode terminals on the circuit board (3p) by means of an anisotropic conductive adhesive in the device of Applicant's admitted prior art, as taught by Hirai and Kishigami for the above set forth reasons.

Response to Remarks

Applicant's argument filed on May 14, 2001 (paper no. 16) has been fully considered but they are not persuasive.

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In response to Applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

In response to Applicant's remarks with respect to Kishigami LCD device and particularly figures 1 and 3, the Examiner merely relied on Kishigami's teaching, in col. 5, lines 57-67 and as shown in figure 4 NOT figure 1 nor 3, for connecting the first/output electrodes (15p) of the semiconductor device (5p), in the APA device (fig. 13), directly to the electrode terminals (12p) of the first substrate (1bp).

Therefore, the combination of APA device and Kishigami is proper and would have given the **same results** since the same structure for the recited circuit connection structure (claim 1) or display apparatus (claim 13) can be obtained.

In response to Applicant's remarks with respect to Hirai device, the Examiner merely reference Hirai's teaching as an evident to show that it is conventional and well-known in the art to to have electrode terminals of two different panels/boards connecting with each other solely by an anisotropic conductive adhesive for easy replacement or detachment of defected panels/boards.

In response to Applicant's remarks with respect to the amended/important features of claims 1 and 13, Applicant is to note that the APA device **alone or as modified** by Kishigami does show a circuit board (3p) disposed **with a space from the first substrate (1bp) of the display panel (1)**; and as set forth above in the rejection, it is well-known in the art and *necessary* for a circuit board to have electrode terminals formed thereon for making electrical contacts between the circuit board and the flexible wiring member or any other connecting boards. Therefore, the circuit board in the APA device would obviously has electrode terminals for supplying an electric power and control signal to the to the semiconductor device (5p). The semiconductor (5p) as disclosed in the APA device alone or as modified by Kishigami does show the semiconductor device **bridges the space between the display panel (1) and the circuit board (3p)**.

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Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Julie Ngo, whose telephone number is (703) 305-3508.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist, whose telephone number is (703) 308-0956.

Papers related to this application may be submitted to Art Unit 2871 by facsimile transmission. The Art Unit's fax number is (703) 308-7721.

JHLN

07/31/01


William L. Sikes

Supervisory Patent Examiner

Group 2871